$t = 0 \quad u(0) = U_m \sin(\varphi_u) = 0 \;\Big\}\Rightarrow \varphi_u = \pi$
$\cos(\varphi_u) < 0 \;\Big\}$

$u(t) = 4 \sin(1024t + \pi)$ en V

• $i(t) = I_m \sin(\omega t + \varphi_i)$

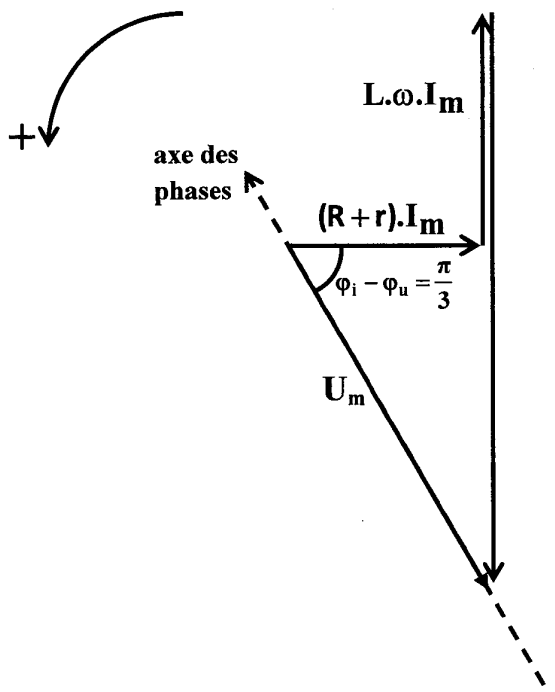
$I_m = \frac{U_{Rm}}{R} = \frac{1}{10} = 0{,}1$ A

$\varphi_i - \varphi_u = \frac{\pi}{3}$

$I(t) = 0{,}1 \sin(1024t + \frac{4\pi}{3})$ en A.

4°)

a-



b- $\cos(\frac{\pi}{3}) = \frac{(R+r)I_m}{U_m} \Rightarrow r = \frac{U_m \cos(\frac{\pi}{3})}{I_m} - R = \frac{4.\cos(60)}{0{,}1} = 10\Omega$

r = 10 Ω

$tg(\frac{\pi}{3}) = \frac{\frac{1}{C\omega} - L\omega}{R+r} \Rightarrow \frac{1}{C\omega} - L\omega = (R+r).tg(\frac{\pi}{3}) \Rightarrow \frac{1}{C\omega} = L\omega + (R+r).tg(\frac{\pi}{3})$

$\Rightarrow \frac{1}{C} = L\omega^2 + (R+r).\omega).\omega.\frac{\pi}{3}) \Rightarrow C = \frac{1}{L\omega^2 + \omega.(R+r).tg(\frac{\pi}{3})}$

$C = \frac{1}{0{,}6.(1024)^2 + (20.1024.tg(60)} = 1{,}5.10^{-6}$F

5°) $U_m = 4$V $\begin{cases} U_{Am} = U_{Rm} = 2v \\ U_{MB_m} = 2v \end{cases}$

a- On remarque que:

$U_m = U_{Rm} + U_{MB_{mA}}$

$ZI_m = RI_m + Z_{MB} I_m$

$Z^2 = R^2 + Z_{MB}^2 + 2RZ_{MB}$

$(R+r)^2 + (L\omega - \frac{1}{a})^2 = R^2 + r^2 + (L\omega - \frac{1}{C\omega})^2 + 2RZ_{MB}$

$2Rr + 2RZ_{MB}$

$r = Z_{MB}$

$r^2 = Z_{MB}^2 \Rightarrow r^2 = r^2 + (L\omega - \frac{1}{C\omega})^2 \Rightarrow L\omega - \frac{1}{\omega} = 0$

$\Rightarrow L\omega = \frac{1}{C\omega} \Rightarrow \omega_2 = \frac{1}{LC} = \omega_0^2$

$\Rightarrow \omega = \omega_0$ resonance d'intensité